

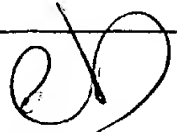


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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/975,560 | 10/12/2001 | Taichi Ichihashi | 990952A | 7532 |
| 23850 | 7590 | 05/25/2004 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP | | | ANGEBRANDT, MARTIN J | |
| 1725 K STREET, NW | | | ART UNIT | |
| SUITE 1000 | | | PAPER NUMBER | |
| WASHINGTON, DC 20006 | | | 1756 | |
| DATE MAILED: 05/25/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|------|---------------------|---|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 09/975,560 | | ICHIHASHI ET AL. | |
| | Examiner | | Art Unit |  |
| Martin J Angebrannt | | 1756 | | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 8-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3 and 8-17 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1 The response of the applicant has been read and given careful consideration. Rejections of the previous office action not repeated below are withdrawn based upon amendments and arguments of the applicant. Responses to the arguments of the applicant are presented after the first rejection to which they are directed

1. Newly submitted claims 18-20 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The recited composition would have other uses than recording holograms based upon its chemical composition. The issue of the use of the composition in various holographic processes was not considered important other than limiting some additives.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 18-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 8-10,13,14 and 16 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Fitchett et al. EP 0342812.

Fitchett et al, EP 0342812 in example 1, teaches a prepolymer which has residual ethylenic unsaturation containing diallylphthalate, allyl methacrylate and vinylidene chloride which is added to an acrylate/triacrylate monomer composition and a photoinitiating system. The recording of a holographic grating using the composition is described in that example. The other examples are similar and meet the claims as well. Useful multi-functional monomers disclosed include diacrylates and dimethacrylates (7/40-55)

The examiner notes that the claims do not recite a non-aqueous solvent, but rely upon the functional language "being soluble in the non-aqueous solvent". The range of non-aqueous solvents disclosed by the applicant on page 39 include very polar solvents such as acetone, methanol and acetonitrile and methyl ethyl ketone (MEK) to non-polar solvents such as benzene, xylene and toluene. The examiner reads the claims not to exclude aqueous based compositions, but to embrace them if they would be soluble in solvent other than water. In the case of the

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Fitchett et al, EP 0342812, example 1, the examiner holds that it is inherently soluble in other polar solvent, other than water, such as acetone or alcohols.

The applicant reads the claims as if “diallylphthalate based prepolymer” was limited to homopolymers. This is not the case and the specification specifically described co-polymers (see [0012-0020] as being embraced by Ally based polymers and diallylphthalate polymers. Therefore the argument is flawed and the rejection stands. The examiner notes that the notation (meth)acrylate embraces both acrylate and methacrylate.

5. Claims 1-3, 8-10,13,14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitchett et al. EP 0342812.

It would have been obvious to one skilled in the art to use a diacrylate or dimethacrylate in place of the acrylates used in the cited examples with a reasonable expectation of achieving comparable results based upon the disclosure of equivalent functionality on page 7 at lines 40-55.

The examiner notes that triacrylates contains two polymerizable groups and therefore meet the limitation of claim 10. This rejection is provided to account for the likely modification of the claim to be limited to dimethacrylates.

The rejection stands for the reasons above without further comments as no other arguments were offered by the applicant.

6. Claims 17 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Kamayachi et al. EP 0323563.

Kamayachi et al. EP 0323563 in example 4, teaches a diallylisophthalate polymer, a resin derived from an acrylate, a triacrylate, a diacrylate and a photocuring agent to render it

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photosensitive. The solvents are cellosolve acetate (examples 4 and preparation example 3) and the tetramethyl benzene based petrolic solvent, IPSOL #150 (preparation examples 3).

The applicant argues that there is nothing teachings the relative refractive index of the allyl based diallyl phthalate prepolymer (Daiso DAP) and the acrylates. The examiner notes that Trimethylol propane triacrylate is disclosed on page 11 at line 3 of the instant specification and that triethylene glycol diacrylate is disclosed on page 10 at lines 20-21 and that the prepolymer is derived from diallyl phthalates is (Daiso DAP) disclosed on page 5 at lines 14-16.

As the allyl based polymer is chemically different from the acrylate polymer resulting from the polymerization of the monomer, the properties, including the refractive index are inherently different. The rejection stands. The examiner notes that the cited examples included other ingredients excluded by the consisting of language.

7. Claims 1,3,4,8-10 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 58-199341.

JP 58-199341 teaches in example 1, a diallylterephthalate polymer with a MW of 7223, methyl ethyl ketone (MEK, solvent), tetraethylene glycol acrylate, and benzoin ether (photoinitiator) (page 4/lower left column) which is coated and the solvent allowed to evaporate. The use of allylphthalate pre-polymers having Mw of 3000-20,000 is disclosed in the abstract and page 2/lower left column. (the use of this as a solder/permanent resist is disclosed.)

It would have been obvious to modify example 1 by using a higher molecular weight diallylterephthalate polymer, such as those having a MW of 10,000-20,000 based upon the disclosure of equivalence within the reference.

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The examiner notes that while the claim does not require tetraethylene glycol acrylate or any other specific (meth)acrylate, these (meth)acrylate compounds are embraced by the language of the claims. As the allyl based polymer is chemically different from the acrylate polymer resulting from the polymerization of the monomer, the properties, including the refractive index are inherently different. The rejection stands.

8 Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-135350.

JP 02-135350 teaches a diallylphthalate pre-polymer (mw 7,000), tripropylmethanol tetracrylate (monomer), Epikote 152, and a benzophenone photoinitiator. (table 1). The solvent is butyl cellosolve acetate (page 4/lower left). The allyl pre-polymer has a MW of 3,000-30,000 (abstract, page 1/lower left). The solution is described as soluble in a chlorine based solvent (methylene chloride).

It would have been obvious to modify the examples by using a higher molecular weight diallylterephthalate polymer, such as those having a MW of 10,000-30,000 based upon the disclosure of equivalence within the reference.

As the allyl based polymer is chemically different from the acrylate polymer resulting from the polymerization of the monomer, the properties, including the refractive index are inherently different. The rejection stands.

8. Claims 1,3 and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 58-199341, in view of Takahashi et al. EP 0249468.

Takahashi et al. EP 0249468 teach in table 1, example 6 containing an allyl pre-polymer (C-3), a vinyl derived polymeric binder (A-1), a pentaerythritol tetracrylate monomer (B-1 or

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B-2) and benzoyl peroxide photoinitiator. (table 1). The use of this as a solder resist is disclosed.
(abstract)

It would have been obvious to modify the composition of JP 58-199341 by using other monomers known to be useful in permanent/solder resists such as those disclosed by Takahashi et al. EP 0249468 with a reasonable expectation of forming a useful solder resist composition.

9. Claim 5 is objected to as being dependent upon a rejected claim, but allowable over the prior art of record.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

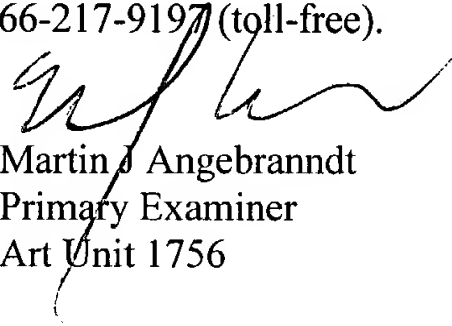
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J. Angebranndt
Primary Examiner
Art Unit 1756

05/20/2004